

AMENDMENTS TO THE CLAIMS

Kindly cancel claims 2-6, 11-18, 24-26 and amend claims 7, 8, 9, 19, 21 and 23 as shown in the listing of claims below. This listing of claims will replace all prior versions, and listings of claims in the application.

LISITING OF CLAIMS

Claims 1-6 (cancel)

Claim 7 (currently amended) ~~The apparatus of claim 5~~ An apparatus, comprising:

a micro machined optical element; and

a magnetic sensor disposed on the micro machined optical element,

wherein the micro machined optical element includes a moveable portion and at least one magnetic sensor disposed on the moveable portion,

wherein the micro machined optical element includes a fixed portion and at least one sensor further includes one or more magnetic sensors disposed on the fixed portion,

wherein the fixed portion includes a base and the magnetic sensor that is disposed on the fixed portion is disposed on the base.

Claim 8 (currently amended) ~~The apparatus of claim 5~~ An apparatus, comprising:

a micro machined optical element; and

a magnetic sensor disposed on the micro machined optical element,

wherein the micro machined optical element includes a moveable portion and at least one magnetic sensor disposed on the moveable portion,

wherein the micro machined optical element includes a fixed portion and at least one sensor further includes one or more magnetic sensors disposed on the fixed portion

wherein the fixed portion includes a top chip and the sensor is disposed on the top chip.

Claim 9 (currently amended) ~~The apparatus of claim 5~~ An apparatus, comprising:

a micro machined optical element; and

a magnetic sensor disposed on the micro machined optical element,

wherein the micro machined optical element includes a moveable portion and at least one magnetic sensor disposed on the moveable portion,

wherein the micro machined optical element includes a fixed portion and at least one

7 sensor further includes one or more magnetic sensors disposed on the fixed portion

8 wherein the sensor that is disposed on the movable portion and the sensor that is disposed
9 on the fixed portion are electrically coupled in a bridge circuit.

1 Claim 10. (original) The apparatus of claim 9 wherein the bridge circuit is a Wheatstone
2 bridge circuit.

1 Claims 11-18 (cancel)

1 Claim 19 (currently amended) ~~The apparatus of claim 18~~ An apparatus, comprising:

2 a micro machined optical element, wherein the micro machined optical element includes
3 a moveable portion wherein the moveable portion is moveable with respect to an axis;

4 at least one magnetic sensor disposed on the micro machined optical element, wherein the
5 magnetic sensor senses a sense magnetic field that is separate from a magnetic field that
6 actuates the micro machined optical element, and

7 a magnetic structure disposed on the micro machined optical element, wherein the
8 magnetic structure creates the sense magnetic field or changes the magnitude or direction of
9 the sense magnetic field,

10 wherein the magnetic structure is disposed substantially parallel to the axis,

11 wherein the at least one magnetic sensor includes a magnetoresistive sensor;

12 wherein the magnetoresistive sensor has a "C" shape having a gap;

13 wherein, in at least one position of the moveable element, the magnetic ~~material~~
14 structure is disposed within the gap.

1 Claim 20 (cancel)

1 Claim 21 (currently amended) ~~The apparatus of claim 20~~ An apparatus, comprising:

2 a micro machined optical element, wherein the micro machined optical element includes
3 a moveable portion wherein the moveable portion is moveable with respect to an axis,

4 wherein the micro machined optical element includes a moveable portion wherein the
5 moveable portion is moveable with respect to an axis;

6 a magnetic sensor disposed on the micro machined optical element, wherein the magnetic
7 sensor senses a sense magnetic field that is separate from a magnetic field that actuates the
8 micro machined optical element, wherein the magnetic material is disposed substantially

9 perpendicular to the axis, wherein the at least one magnetic sensor includes a
10 magnetoresistive sensor; wherein the magnetoresistive sensor has a “C” shape having a gap.

1 Claim 22 (original) The apparatus of claim 21 wherein, in at least one position of the
2 moveable element, the magnetic material is disposed within the gap.

1 Claim 23 (currently amended) ~~The apparatus of claim 12~~ An apparatus, comprising:

2 a micro machined optical element;

3 a magnetic sensor disposed on the micro machined optical element,

4 wherein the magnetic sensor senses a sense magnetic field that is separate from a
5 magnetic field that actuates the micro machined optical element; and

6 a magnetic structure disposed on the micro machined optical element, wherein the
7 magnetic structure creates the sense magnetic field or changes the magnitude or direction of
8 the sense magnetic field;

9 wherein the ~~at least one~~ magnetic sensor includes a magnetoresistive sensor characterized
10 by a serpentine shape.

1 Claims 24-26(cancel)